means execute syndrome calculation and said error detecting means execute error detection in parallel; for making said error correcting means execute error correction when said syndrome calculating means detects an error-containing code; and for making said error correcting means provide said system control means with information which designates the position of the error-containing code in an error correcting code word obtained in the error correction;

a non-error range designating sub means for designating, one sector at a time, a range from which an error-containing code has not been detected at the odd-numbered error correction or the subsequent even-numbered error correction, based on said information that designates the code word including the error-containing code and said information that designates the position of the error-containing code in the error correcting code word;

an odd-numbered error correction sub means for, as an odd-numbered error correction as a third-time or later error correction, providing concurrently said syndrome calculating means and said error detecting means with a code in the same direction as in the previous odd-numbered error correction except for a sector in one ECC block which has been designated by said non-error range designating sub means as the range from which an error-containing code has not been detected in and before the preceding even-numbered error correction until said syndrome calculating means detects an error-containing code; for making said syndrome calculating means execute syndrome calculation and said error detecting means execute error detection in parallel; for making said error

correcting means execute error correction when said syndrome calculating means detects an error-containing code; and for making one of said syndrome calculating means and said error correcting means provide said system control means with information which designates the code word including the error-containing code; and

a number-of-times control sub means for repeating the odd-numbered error correction and the even-numbered error correction a predetermined number of times.

8. The error correction device of claim 7, wherein said number-of-times control sub means is a three-time repetition control sub means for repeating the error correction three times at most.

9. The error correction device of claim 7 or 8 further comprising a storing means for storing mid-term results, in code word units, of each code word from which no error has been detected in the error detecting process done by said error detecting means until said syndrome calculating means detects an error-containing code, wherein

said non-error range designating sub means is a non-error sector code word range designating sub means for designating, in code word units of a sector, a range from which an error-containing code has not been detected in the odd-numbered error correction or the subsequent even-numbered error correction, based on said information that designates the code word including the error-containing code and on said information that designates the position of the error-containing code in the error correcting code word;

and

said odd-numbered error correction sub means is an odd-numbered error correction sub means with mid-term results for, in the third-time or later odd-numbered error correction, making said bus control means start a concurrent data transfer not at the head but at the code word of the sector from which an error-containing code has been detected, based on the information designated by said non-error sector code word range designating sub means; for making said syndrome calculating means start syndrome calculation at the code word; and for making said error detecting means start error detection at a code word somewhere in the middle of the sector by using contents stored in said storing means as an initial value.

10. The error correction device of claim 7 or 8 further comprising a sector-basis storing means for storing mid-term results, on a sector-by-sector basis, in code word units, of each code word from which no error has been detected in the error detecting process done by said error detecting means, until said syndrome calculating means detects an error-containing code, wherein

said non-error range designating sub means is a sector-basis non-error code word range designating sub means for designating, on a sector-by-sector basis, in code word units, a range from which an error-containing code has not been detected in the odd-numbered error correction or the subsequent even-numbered error correction, based on said information that designates the code word including the error-containing code and on said information that designates the position of the